

## FOSSIL INSECTS FROM MONTANA

## 1. A NEW FOSSIL NEMOPTERID (NEUROPTERA)

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Photography by Edwin N. Horne

It is our good fortune to be able to add the second known fossil insect in the rare Neuropterous family, Nemopteridæ.

The family Nemopteridæ was monographed by Longinas Navas in 1912 in *Genera Insectorum* No. 136, with key to genera, list of all species, and colored illustrations of each genus.

However Navas overlooked a short note in *Science*, vol. 36, p.446 (Oct. 4, 1907) by T. D. A. Cockerell, giving a brief description of a fossil Nemopterid, *Halter americana* Cockerell, from the Miocene of Florissant, Colorado.

This is a small family, but the species are sparsely scattered in Europe, Asia, Africa, Australia and South America. The existence in ancient times of two fossil species in the Rocky Mountain area of the United States is therefore of considerable interest.

Dr. Cockerell's note is rather unsatisfactory as a description, but he says enough to prove that he had a different insect from the one which we will describe. We quote his entire note:

"*Halter americana* new species".

"A wonderfully preserved example with the wings spread, from Station 13B (S. A. Rohwer) (Florissant, Colorado). The anterior wings are clear hyaline, 31mm. long, with the venation as usual in the genus (*Halter*); hind wings (as in all of the Nemopteridæ to which family it belongs) very long and narrow, length 46mm. with an apical fiddle shaped expansion which is dark colored. The Nemopteridæ are today confined to the Old World, except a single species of *Stenorhachus* found in Chile. The Florissant insect is not of the Chilian genus but belongs to that section of *Halter* which includes the Persian *H. extensa* (Oliv.). In *H. extensa* the black area of the hind wings is broken into two, whereas in the fossil it is solid and continuous. The persistence of such an extremely peculiar type through such a long time and such migrations indicates a remarkable degree of stability".

Navas took *H. extensa* out of *Halter*, and based his new genus *Olivierina* on it, dividing it off from *Halter* on the very basis of this division of the hind wing apical enlargement into two

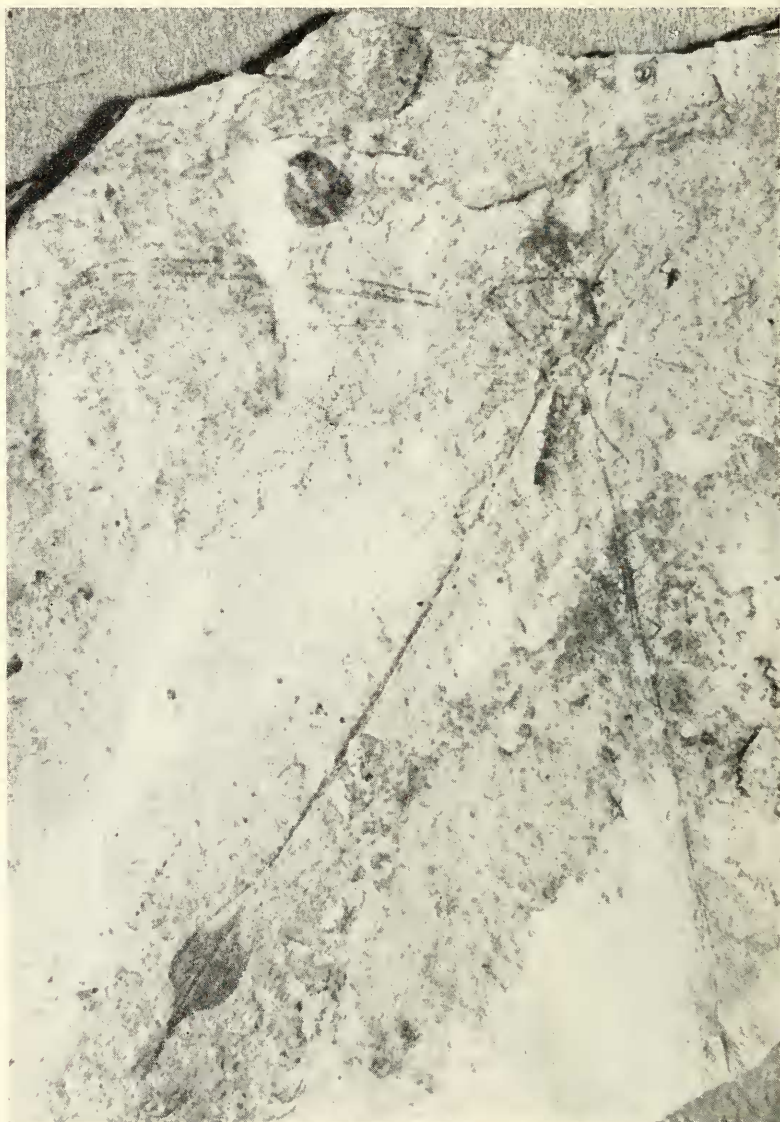


PLATE 16

Fossil Nemopterid, *Olivierina metzeli*, Pierce and Kirkby.

expansions. *Chasmoptera hutti* Wood of Australia also has the paddle divided into two parts but the stem is much shorter in proportion.

Our new species is separable in the same way from *Halter americana* Cockerell, and we therefore place it on the basis of the generic description in *Olivierina* and name it in honor of Elvyn Metzels, the original discoverer of the Montana fossil insect deposit located at the South end of Ruby Reservoir, South and West of Alder, Montana, in 1928.

The site has been mentioned in literature as follows:

"Ancient Wings in the Rocks" by Henry P. Zuidema, *Natural History magazine*, (1953, vol. 62, pp. 32-37, with 10 figures). The deposit is stated to be Miocene in Montana near the headwaters of the Missouri, but is not more definitely located.

A report in "Earth Science" (Sept.-Oct., 1955, pp. 14-18, with 9 figures) by Henry Zuidema, under the title "Ancient Wings in the Rocks". He reports that his material was collected in 1947, but in this brief popular article he does not more closely locate the source, than the state of Montana.

The Junior author and husband, Sam Kirkby, visited this site at various times since 1955, and collected a number of fossil insects which will be treated in subsequent papers in this series. The type specimen was collected by Elvyn Metzels. When received the right hind wing was only visible in one half its length. By use of a fine scalpel, and with the aid of Xylol to show the underlying color, the Senior author was able to expose the entire wing. The fore wings are only fragmentary in detail, but typically Nemopterid.

Order *NEUROPTERA*

Superfamily *NEMOPTEROIDEA*

Family *NEMOPTERIDÆ*

Subfamily *NEMOPTERINÆ*

Genus *OLIVIERINA* Navas 1912

New species *Olivierina metzelsi*, Pierce and Kirkby

Holotype: Specimen in private museum of Samuel E. and Ruth E. Kirkby, Riverside, California. Specimen #2747, from Oligocene shales near Alder, Montana.

Description of specimen: Overall length of body 13mm., only six abdominal segments visible, measuring 6mm. in length. Head transverse. Antennæ elongate, linear, filiform, measuring 5mm. in length. Legs simple and slender. Anterior legs: femur equal to tibia, tarsus about  $\frac{1}{3}$  as long as tibia. Middle legs slightly longer than anterior. Hind legs considerable longer;

femur not greatly dilated, tibia about  $1\frac{1}{2}$  times as long as femur. Forewings very much broken, measuring approximately 30 mm. long by 9 mm. wide; Those portions visible showing clearly Nemopterid venation. Hind wings measure 48 mm. in length; stem with three veins in basal third beyond which the middle vein branches, so there are four veins running into the beginning of the paddle. The paddle or widened area of hind wing is 5 mm. long and  $3\frac{3}{4}$  mm. wide and has the margin strongly outlined, with three parallel central veins to apex: from the outer two of these three veins, there are many diagonal veins to the margin, some of which are branched near base, near middle, or near apex, veins laterally dissimilar. This leaf like arrangement narrows for a short distance and widens again to a narrow inflation with diagonal veins. This apical portion is not complete in the type specimen.

The only known living species in this genus is *Olivierina expansa* (Olivier) Navas which occurs in Persia, Syria and the Caucasus.

This is the first fossil species in the genus and the second fossil species in the family. It is very close in appearance to the type, but differs by having the second or apical portion of the expansion narrower than in the type. No doubt if we could know what the head and thorax looked like, it would differ materially from the type species. But there is such a gap in time and distribution between the two that we feel warranted in giving the fossil a name.



## PROCEEDINGS OF THE ACADEMY

November 21, 1958

The Section on Anthropology, with Russell Belous, Chairman, sponsored the November meeting of the Academy held at the Los Angeles County Museum. No dinner was held before the meeting. Miss Ruth DeEtte Simpson, Associate Curator of Anthropology at the Southwest Museum gave a summary account of her recent trip to Europe visiting various Museums and important sites of early man.

### ABSTRACT OF ADDRESS

*"Impressions Derived from an Archeological Tour of Western Europe"*

Ruth DeEtte Simpson

At the suggestion of European prehistorians, the speaker spent  $3\frac{1}{2}$  months studying significant Lower Paleolithic sites and collections, and talking with field archeologists in England, France, Spain, Denmark and Switzerland. Information derived from this investigation will aid materially in the undersanding of archeological projects being directed by the speaker in the western American deserts.